PACKAGING AND TRANSPORTATION FOR OFFSITE SHIPMENT OF MATERIALS OF NATIONAL SECURITY INTEREST

1. PURPOSE. The Department of Energy (DOE) has broad authority under the Atomic Energy Act (AEA) of 1954, as amended, to regulate all aspects of activities involving radioactive materials that are undertaken by DOE or on its behalf, including the transportation of radioactive materials. DOE exercises this authority to regulate certain DOE shipments, such as shipments of Materials of National Security Interest (MNSI) undertaken by governmental employees or shipments involving special circumstances. The National Nuclear Security Administration (NNSA) has been assigned the responsibility to manage and oversee the offsite shipments of MNSI including the operation of the Transportation Safeguards System (TSS). Offsite shipments of hazardous materials made by or under the direction or supervision of DOE for the purpose of national security are not subject to the Department of Transportation (DOT) regulations. However, the purpose of this Order is to make clear that the packaging and transportation of all offsite shipments of MNSI for DOE must be conducted in accordance with DOT and Nuclear Regulatory Commission (NRC) regulations that would be applicable to comparable commercial shipments, except where an alternative course of action is identified in this Order. The requirements and responsibilities prescribed in this Order are intended to ensure NNSA resources including the TSS are used and managed in an efficient manner. For packaging and transportation of non-MNSI offsite shipments and onsite transfers of non-MNSI radioactive and other hazardous materials refer to DOE Order 460.1D and revisions thereafter. For packaging and onsite transfers of MNSI, refer to DOE Order 461.2 and revisions thereafter.

2. CANCELLATIONS. DOE Order 461.1B, Packaging and Transportation for Offsite Shipment of Materials of National Security Interest. Cancellation of a directive does not, by itself, modify or otherwise affect any contractual or regulatory obligation to comply with the directive. Contractor Requirements Documents (CRDs) that have been incorporated into a contract remain in effect throughout the term of the contract unless and until the contract or regulatory commitment is modified to either eliminate requirements that are no longer applicable or substitute a new set of requirements.

3. APPLICABILITY.

   a. Departmental Applicability. Except for the equivalencies and exemptions in paragraph 3.b(2) this Order applies to any of those Departmental elements that has responsibility to perform activities associated with offsite shipments of MNSI.

      The Administrator of the NNSA will assure that NNSA employees comply with their responsibilities under this directive. Nothing in this directive may be construed to interfere with the NNSA Administrator's authority under

section 3212(d) of Public Law (P.L.) 106-65 to establish Administration-specific policies, unless disapproved by the Secretary.

b. DOE Contractors.

(1) Except for the equivalencies and exemptions in paragraph 3.b(2), the Contractor Requirements Document (CRD) (Attachment 1) identifies the requirements of this Order that apply to contracts that include the CRD. The CRD must be included in contracts of all DOE/NNSA contractors having responsibility for the packaging and transportation activities addressed in this Order, and for performing support functions such as the development, design, testing, analysis, procurement and/or fabrication, maintenance, safety basis document development and maintenance for the packaging/packages used in the transportation of MNSI. Field Organization Managers are responsible for ensuring their contracting officer(s) know when this Order applies to specific contracts, and for ensuring the CRD is incorporated into those contracts. Once made known to them, contracting officers are responsible for incorporating the CRD into applicable contracts.

(2) Equivalencies and Exemptions. Requests for equivalencies and exemptions to the requirements of this Order are processed in accordance with DOE Order 251.1C, Departmental Directives Program. The Cognizant Secretarial Officer (CSO) will approve exemptions and equivalencies to this Order. Central Technical Authority (CTA) concurrence is required for both exemptions and equivalencies to this Order. Exemptions to this Order may be granted, provided the proposed exemptions are not prohibited by law and do not present an undue risk to security, public health and safety, workers, or the environment.

(a) Equivalency. In accordance with the responsibilities and authorities assigned by Executive Order 12344, codified at 50 USC sections 2406 and 2511 and to ensure consistency through the joint Navy/DOE Naval Nuclear Propulsion Program, the Deputy Administrator for Naval Reactors (Director) will implement and oversee requirements and practices pertaining to this Directive for activities under the Director's cognizance, as deemed appropriate.

(b) Exemption. Consistent with Secretarial Delegation Order Number 00-03300B to the Administrator and Chief Executive Office of Bonneville Power Administration (BPA), this Order does not apply to BPA.

(c) Exemption. Operations conducted under DOE Order 460.1D, Hazardous Materials Packaging and Transportation Safety, and revisions thereafter.

(d) Exemption. Operations conducted under DOE Order 461.2, Onsite Packaging and Transfer of Materials of National Security Interest, dated 11-01-2010.

(e) Exemption. Operations conducted under DOE STD-1212, Explosives Safety Manual.

4. REQUIREMENTS.

a. Regulatory Authority. Each element subject to this Order must perform packaging and transportation of offsite shipments of MNSI in accordance with DOT Hazardous Materials Regulations (HMR), 49 CFR Parts 171-180, and with NRC packaging regulations in 10 CFR Part 71, except as otherwise specified in this Order.

b. Nuclear Explosive Shipments must meet DOE Order 452.2E, Nuclear Explosive Safety.

c. Compliant Shipments.

(1) Offsite Transportation Certificate (OTC) is required for fissile or Type B Radioactive Material (RAM) packages that have demonstrated compliance with 10 CFR 71

(a) Each element requesting an OTC must submit an application to the NNSA Certifying Official (NNSA CO), nine months prior to the need date. The application must include a Safety Analysis Report for Packaging (SARP) and proof of an Office of Secure Transportation (OST) approved tie-down procedure. The SARP content and format must conform to the NRC Regulatory Guide 7.9, Revision 2 as amended by NNSA CO guidance.

(b) NNSA CO must review the application, and document the review in a Safety Evaluation Report (SER).

(c) The NNSA CO may issue an OTC for a period of up to five years.

(d) An OTC may be renewed following the process described in this section.

(e) Prior to first use, each element requesting to make a shipment under an OTC must submit a written request to the NNSA CO requesting to become an authorized user. The request must be supported by:

(1) Site specific packaging procedures.

(2) 10 CFR 71 Subpart H compliant quality assurance program.

(f) Authorized Users must maintain and use current copies of the SARP and OTC.

(2) Other DOT Compliant Shipments – Offsite shipments prepared according to the DOT HMR, and verified by the shipper as compliant, should be evaluated for shipment via an approved commercial carrier unless security requirements dictate use of the TSS. Shipping Papers, prepared as specified in 49 CFR 172.200, must be submitted to OST.

d. Non-Compliant Shipments

(1) Offsite Transportation Authorization (OTA) is required for hazardous materials packages which contain non-fissile, less than Type B quantities of MNSI, and which do not comply with the DOT HMR.

(a) Each element requesting an OTA must submit an application to the NNSA CO. The application must be submitted two months prior to the OTA need date, and must be supported with:

i. Hazard Analysis Report (HAR) documenting the risk the shipment poses to the health and safety of the worker, public or environment.

ii. Proof of OST approved tie-down procedures for package.

(b) The NNSA CO must review the application and document the review in a SER.

(c) The NNSA CO may issue an OTA for a period of up to five years.

(d) An OTA may be renewed following the process described in this section.

(2) Offsite Transportation Direction (OTD) is required for packages which contain fissile or Type B quantities of MNSI, but cannot comply with 10 CFR 71.

(a) Elements requesting an OTD must submit a request to their respective Deputy Administrator through their program office. The request must demonstrate that the proposed shipments are for the purpose of national security and the reasons why a compliant shipment cannot be made.

(b) Elements whose request to proceed has been approved by the Deputy Administrator must submit their OTD application to the NNSA CO nine months prior to the shipping date. The OTD application must be supported by:

(1) Deputy Administrator approved request to proceed with the OTD application.

(2) Transportation System Risk Assessment (TSRA) documenting the risk the shipment poses to the health and safety of the worker, public, or environment.

(3) Proof of OST approved tie-down procedures for package.

(c) The NNSA CO must review the application and document the review in a SER.

(d) The NNSA CO may issue an OTD for a period of up to five years.

(e) An OTD may be renewed following the process described in this section.

(f) Prior to first use, each element requesting to make a shipment under an OTD must submit a written request to the NNSA CO requesting to become an authorized user. The request must be supported by site specific packaging procedures.

(g) Authorized Users must maintain and use current copies of the TSRA and OTD.

(3) National Security Exemption (NSE) is required for air transportation of plutonium in a package that does not comply with 10 CFR 71.74.

(a) Each element requesting an NSE must submit their request as specified in 10 CFR 871.1, to the Deputy Administrator for Defense Programs, CTA and NNSA CO. The request must be supported by a TSRA, submitted to NNSA CO nine months prior to the shipment date, and documents the risk the shipment poses to the health and safety of the worker, public, or environment.

(b) The NNSA CO must review the TSRA and document the review and CO concurrence or non-concurrence in a SER.

(c) The SER must be submitted to CTA and Deputy Administrator for Defense Programs.

(d) The CTA must review and concur, or non-concur on the final NSE prior to the Deputy Administrator for Defense Programs approval.

(e) An NSE without concurrence from CTA and NNSA CO requires the NNSA Administrator approval.

e. Quality Assurance

(1) Each element using or performing design, testing, fabrication, procurement, inspection, operations or maintenance for Type B and fissile materials packaging must perform those activities under a 10 CFR Part 71 Subpart H compliant quality assurance (QA) program approved by the NNSA CO.

(2) Each element that performs functions for all other radioactive and hazardous materials packaging must perform those operations under a DOE Order 414.1D, compliant QA program approved by the responsible Field Organization Manager.

(3) Deviations must be reported as specified by DOE Order 232.2, Admin Chg. 1, Occurrence Reporting and Processing of Operations Information.

f. Transportation Safeguards System.

(1) OST must prepare their Documented Safety Analysis as described in Appendix A, which specifies the methodology for developing and maintaining TSS Documented Safety Analysis that complies with 10 CFR 830 requirements.

(2) All vehicles used to transport MNSI offsite must be operated in compliance with the applicable Federal Motor Carrier Safety Regulations (FMCSRs) (49 CFR Parts 350–399) or as approved by the Assistant Deputy Administrator for Secure Transportation.

g. Scheduling Transportation Safeguards System Shipments.

(1) Long Term Planning: Shipping forecasts must be developed by each Program Secretarial Officer (PSO).The shipping forecast must be submitted to the Assistant Deputy Administrator for Secure Transportation.

(2) Scheduling conflicts will be resolved by the Secure Transportation and Packaging Steering Committee (STPSC). In the event of unresolved scheduling conflicts, the STPSC will elevate the issue to the Secure Transportation Asset Advisory Board (STAAB) for resolution.

(a) Transportation Shipping Request: Each site must confirm their shipment needs with a Transportation Shipping Request (TSR), no less than 60 days prior to Material Availability Date, with updates before the 30 and 7 day submittal requirements. Prior to completing a TSR, sites must ensure that current shipping authorizations or compliant packaging are available. The TSR content, format, and mechanism must be defined by OST, as addressed in the Shipment Forecast and Request Procedure (SFRP).

(b) Requests for significant variances to the TSS schedule (TSR Requirements) must be submitted per the SFRP.

h. Training.

(1) Each element that offers MNSI for transportation must:

(a) Ensure that all personnel who support and/or perform packaging and transportation operations are appropriately trained and qualified.

(b) Maintain auditable training records in accordance with approved NNSA or sites specific records schedule.

5. RESPONSIBILITIES.

a. Administrator, NNSA.

(1) Ensures implementation and execution of requirements and responsibilities in accordance with this Order.

(2) Approves or disapproves NSEs that have not been concurred by CTA and the NNSA CO.

b. Cognizant Secretarial Officer (CSO).

(1) Approves or disapproves exemptions and equivalencies to this Order.

c. Central Technical Authority (CTA).

(1) Concurs or non-concurs with the request for exemptions or equivalencies from the requirements of this Order.

(2) Reviews and concurs or non-concurs with 10 CFR 871 NSEs for air transportation of plutonium.

d. Program Secretarial Officers.

(1) Provide information to the Assistant Deputy Administrator for Secure Transportation and STPSC concerning new shipping campaigns as early as possible.

(2) Provides shipment forecasts and updates for use of the TSS.

(3) Assigns a representative to the STPSC and the STAAB.

e. NNSA Deputy Administrators

(1) Provides information to the Assistant Deputy Administrator for Secure Transportation and STPSC concerning new shipping campaigns as early as possible.

(2) Provides shipment forecasts and updates for the use of the TSS.

(3) Assigns a representative to the STPSC and the STAAB.

(4) Approves or disapproves requests to proceed with OTD applications submitted by the program offices.

(5) Submits copy of approved request to proceed with the OTD application to the NNSA CO.

f. Deputy Administrator for Defense Programs.

(1) Designates specific materials or items, not defined in this Order, as MNSI.

(2) Approves or disapproves 10 CFR 871 NSEs for air transportation of plutonium.

(3) Defines the content and format of an NSE.

g. Principal Assistant Deputy Administrator for Military Application.

(1) Serves as the chairperson of the STAAB.

h. Field Organization Managers.

(1) Ensures the CRD is incorporated in all contracts of elements that have responsibility for activities associated with offsite shipments of MNSI.

(2) Provides periodic support to external organizations conducting oversight at field organizations, and contractor sites/facilities.

(3) Conducts oversight of packaging and transportation safety programs under their cognizance in accordance with DOE Order 226.1B.

(4) Reviews and submits contractor packaging procedures to the NNSA CO.

(5) Reviews and submits contractor 10 CFR 71 Subpart H quality assurance program to the NNSA CO.

(6) Reviews and approves quality assurance programs that comply with DOE Order 414.1D, Quality Assurance.

(7) Assigns a representative to serve on the STPSC.

(8) Ensures that the site has DOE personnel assigned and trained to oversee compliance with the requirements of this Order, and that oversight is performed and documented.

i. Assistant Deputy Administrator for Secure Transportation.

(1) Prepares Documented Safety Analysis according to Appendix A of this Order.

(2) Approves tie-down procedures for packages transported within the TSS.

(3) Manages and operates the TSS.

(4) Authorizes alternatives from the Federal Motor Carrier Safety Regulations (49 CFR Parts 350-399).

(5) Defines the frequency and content of shipping requirement forecasts.

(6) Establishes TSR requirement and format.

(7) Approves requests for variances to TSS scheduling requirements.

(8) Assigns a representative to serve on the STPSC and the STAAB.

j. NNSA CO.

(1) Approves, disapproves, or revokes OTAs, OTCs, and OTDs.

(2) Concurs or non-concurs with NSE applications and provides recommendations to the CTA.

(3) Reviews, concurs or non-concurs on the final NSE prior to the Deputy Administrator for Defense Programs approval.

(4) Reviews and approves NNSA elements' 10 CFR 71 Subpart H compliant quality assurance programs.

(5) Assigns a representative to serve on the STPSC.

(6) Ensures all NNSA CO technical staff members are trained and qualified.

(7) Conducts periodic oversight of DOE contractor packaging and transportation activities per DOE Order 226.1B.

(8) Provides guidance to field organizations and contractors that prepare MNSI safety basis documents (e.g., SARPs, TSRAs, and HARs).

(9) Reviews and approves contractor packaging procedures.

(10) Appoints federal chairperson and members of the Transportation Safety Review Panels (TSRPs) and convenes TSRPs.

(11) Documents results of package reviews in a SER.

(12) Approves, disapproves, or revokes authorized users of NNSA certified packages.

(13) Maintains a list of approved authorized users.

(14) Maintains copies of all currently approved safety basis documents, SERs, OTAs, OTCs, and OTDs.

(15) Ensures OST approved tie-down procedures are in place prior to OTA, OTC, or OTD issuance.

(16) Provides support to DOE and NNSA organizations conducting oversight of packaging operations performed under this Order per DOE Order 226.1B, Implementation of Department of Energy Oversight Policy.

k. Deputy Administrator for Naval Reactors.

(1) Implements and oversees all policies and practices pertaining to this Order for activities under the cognizance of the Naval Reactors Program.

(2) Assigns a representative to serve on the STPSC and the STAAB.

6. DEFINITIONS.

a. Authorized User: An organization authorized by the NNSA CO to use a fissile or Type B radioactive material package.

b. Hazards Analysis Report (HAR). The safety basis document supporting approval of an OTA. The HAR identifies the type and quantity of hazardous material, packaging, mode of transportation, tie-down procedures, and the risk the shipment poses to the health and safety of the public, worker, or environment. The NNSA CO establishes the content and format of a HAR.

c. Materials of National Security Interest (MNSI). Hazardous materials used in the development, testing, production and maintenance of nuclear weapons and other materials that have been designated as critical to our national security. Items that contain these materials include miscellaneous pieces and parts of a nuclear weapon, specialized reactor fuel elements, subcritical experimental assemblies, criticality experiment machine parts, nuclear device parts, nuclear explosives, and nuclear explosive like assemblies. The Deputy Administrator for Defense Programs may designate other specific items as Materials of National Security Interest.

d. National Security Exemption (NSE): An authorization governed by 10 CFR 871.1 and this Order, for air transportation of plutonium in package that does not comply with 10 CFR 71.74.

e. Nuclear Explosive. An assembly containing fissile and/or nuclear fusion materials and main charge high-explosive parts or propellants (e.g., a nuclear warhead or nuclear explosive test device) capable of producing a nuclear yield.

f. Offsite. Any area within or outside the boundaries of a DOE site or facility to which the general public has free and uncontrolled access.

g. Offsite Transportation Authorization (OTA). An NNSA authorization for approving the offsite shipment of packages that do not comply with the DOT HMR. OTAs are for packages containing non-fissile, less than Type B quantities of radioactive and other hazardous material. The OTA defines the authorized package and specifies handling and transportation requirements.

h. Offsite Transportation Certificate (OTC). An NNSA certificate for fissile or Type B radioactive material packages that meet 10 CFR 71. The OTC defines the authorized package and specifies handling and transportation requirements.

i. Offsite Transportation Direction (OTD). An NNSA authorization for approving the offsite shipment of packages that do not comply with 10 CFR 71. OTDs are for packages containing fissile or Type B quantities of radioactive material. The OTD defines the authorized package and specifies handling and transportation requirements.

j. Package. Packaging plus its hazardous material contents as presented for transport.

k. Packaging. A receptacle and any other components important to the safe performance of the package. It may consist of one or more receptacles, absorbent materials, spacing structures, thermal insulation, radiation shielding, service equipment for filling, emptying, venting and pressure relief, and devices for cooling or absorbing mechanical shocks. The conveyance, tie-down system, and auxiliary equipment may sometimes be designated as part of the packaging.

l. Packaging Procedures: Written procedures for performing the operations identified in Chapter 7 of the SARP or TSRA.

m. Safety Analysis Report for Packaging (SARP). A document that conforms to NRC Regulatory Guide 7.9, as amended by NNSA CO guidance that demonstrates the package complies with applicable 10 CFR 71. The SARP consists of sections containing general information; structural, thermal, containment, shielding and criticality evaluations; operating procedures; acceptance tests, and maintenance and quality assurance.

n. Safety Basis. This Order refers to several different types of documents generically as safety basis documents (e.g., SARPs, TSRAs, and HARs), many of which need to be developed to obtain *authorization* of shipments of nuclear materials based on requirements established by the Department of Transportation, the Nuclear Regulatory Commission, and the Department of Energy. Independent of these other safety basis documents, the OST Documented Safety Analysis (DSA) is the only "Safety Basis" document that is intended to be developed to achieve compliance with the Safety Basis requirements of Title 10 Code of Federal Regulations Part 830 (10 CFR 830), *Nuclear Safety Management*. Therefore, the requirements of 10 CFR 830 are only intended to apply to the OST DSA, not the other documents necessary to achieve authorization for transportation operations.

o. Safety Evaluation Report (SER). The report prepared by DOE to document the sufficiency of the analysis in the safety basis documents (i.e. SARP, TSRA, and HAR).

p. Secure Transportation Asset Advisory Board (STAAB). A senior management group chaired by the Principal Assistant Deputy Administrator for Military Applications, with membership from each participating Program Secretarial Officer and NNSA Deputy Administrator, which provides a forum for to integrate the transportation organizational needs of all participants.

q. Secure Transportation and Packaging Steering Committee (STPSC). A group chaired by the NNSA Packaging Program Manager, with membership from all sites and program offices that participate in transportation of MNSI. The STPSC provides a forum to integrate the needs of all participants and elevate any needs that cannot be met to the STAAB for resolution.

r. Transportation Safeguards System (TSS). A DOE system managed and operated by the Office of Secure Transportation. It is used for the safe and secure movement of MNSI and other cargo requiring safeguards.

s. Transportation Safety Review Panel. A panel chaired by a federal employee and composed of subject matter experts that perform independent technical reviews of the safety basis documents for fissile or Type B radioactive material packages.

t. Transportation Shipping Request (TSR). A shipping request, provided by the shipper to the Office of Secure Transportation. A TSR includes: shipment number, pickup and delivery points, delivery date, quantity and type of packages in shipment, security classification of shipment, the shipping authorization, special handling requirements, hazardous material information, approved confirmations from both shipper and receiver, 24-hour emergency response telephone numbers, cargo tie- down restraint configurations, and name of the program office for which the shipment is being performed.

u. Transportation System Risk Assessment (TSRA). The safety basis document supporting approval of an OTD and NSE. The TSRA identifies why a compliant shipment cannot be made, the content, packaging, mode of transportation, tie-down procedures, and the risk the shipment poses to the health and safety of the worker, public, or environment. The NNSA CO establishes the content and format of a TSRA.

7. REFERENCES.

a. Title XXXII of P.L. 106-65, National Nuclear Security Administration Act, as amended, which established a separately organized agency within the Department of Energy.

b. DOE Order 226.1B, Implementation of Department of Energy Oversight Policy, dated 04-25-11.

c. DOE Order 232.2, Admin Chg. 1, Occurrence Reporting and Processing of Operations Information, dated 08-30-11.

d. DOE Order 414.1D, Quality Assurance, dated 05-08-13.

e. DOE Order 452.2E, Nuclear Explosive Safety, dated 01-26-15.

f. NRC Regulatory Guide 7.9, Standard Format and Content of Part 71 Applications for Approval of Packages for Radioactive Material.

g. Title 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

h. Title 10 CFR Part 830, "Nuclear Safety Management."

i. Title 49 CFR Parts 100–185, "Pipeline and Hazardous Materials Safety Administration, Department of Transportation."

j. Title 49 CFR Parts 350–399, "Federal Motor Carrier Regulations."

8. CONTACT. Questions concerning this Order should be addressed to the NNSA Office of Packaging and Transportation 505-845-5360.

CONTRACTOR REQUIREMENTS DOCUMENT
DOE Order 461.1C, PACKAGING AND OFFSITE TRANSPORTATION OF MATERIALS OF NATIONAL SECURITY INTEREST

This contractor requirements document (CRD) establishes requirements for Department of Energy (DOE) site/facility management contractors, including National Nuclear Security Administration (NNSA) contractors.

Regardless of the performer of the work, contractors are responsible for compliance with the requirements of this CRD. Contractors are responsible for flowing down the requirements of this CRD to subcontracts at any tier to the extent necessary to ensure the contractor's compliance with the requirements. In doing so, the contractor must not unnecessarily or imprudently flow down requirements to subcontracts. That is, the contractor must: (1) ensure that it and its subcontractors comply with the requirements of this CRD, and (2) incur only costs that would be incurred by a prudent person in the conduct of a competitive business.

All contractors with this CRD incorporated in their contracts must comply with the following requirements to support offsite shipment of Materials of National Security Interest (MNSI):

a. Contractors must perform packaging and transportation of offsite shipments of MNSI in accordance with Department of Transportation (DOT) Hazardous Materials Regulations (HMR), 49 CFR 171-180, and with Nuclear Regulatory Commission (NRC) packaging regulations in 10 CFR Part 71, except as otherwise specified in this CRD.

b. Contractors must comply with DOE Order 452.2E, Nuclear Explosive Safety requirements for nuclear explosive shipments.

c. Compliant Shipments:

   (1) An Offsite Transportation Certificate (OTC) is required for fissile or Type B radioactive material (RAM) packages that demonstrate compliance with 10 CFR 71.

   Contractors requesting an OTC must submit an application to the NNSA Certifying Official (NNSA CO), nine months prior to the need date. The application must include a Safety Analysis Report for Packaging (SARP) and proof of an Office of Secure Transportation (OST) approved tie-down procedure. The SARP content and format must conform to the NRC Regulatory Guide 7.9, Revision 2 as amended by NNSA CO guidance.

   OTCs may be renewed following the process described in this section.

   Prior to first use, contractors must become an authorized user. Contractors must submit a written request to the NNSA CO through the Field

Organization Manager for review and approval. The request must be supported by:

(a) Site specific packaging procedures.

(b) 10 CFR 71 Subpart H compliant quality assurance program.

Authorized users must maintain and use current copies of the SARP and OTC.

(2) Other DOT Compliant Shipments – Contractors offering offsite shipments prepared according to the DOT HMR should evaluate the shipment for transport via an approved commercial carrier, unless security requirements dictate use of the TSS. Contractors must verify that the shipment is compliant, and submit 49 CFR 172.200 shipping papers to OST.

d. Non-Compliant Shipments

(1) An Offsite Transportation Authorization (OTA) is required for hazardous materials packages which contain non-fissile, less than Type B quantities of MNSI, and which do not comply with the DOT HMR.

Contractors requesting an OTA must submit an application to the NNSA CO. The application must be submitted two months prior to the OTA need date, and must be supported by:

(a) Hazard Analysis Report (HAR) documenting the risk the shipment poses to the health and safety of the worker, public, or environment.

(b) Proof of OST approved tie-down procedures for package.

(2) An Offsite Transportation Direction (OTD) is required for packages which contain fissile or Type B quantities of MNSI, and do not comply with 10 CFR 71.

Prior to developing the Transportation System Risk Assessment (TSRA), contractors must submit a request for approval to proceed to their respective NNSA program office.

Contractors must submit their OTD application through their respective NNSA program office. The application must be submitted to the NNSA CO nine months prior to the shipping need date.

The OTD application must be supported by:

(a) Deputy Administrator approved request to proceed with the OTD application.

(b) TSRA documenting the risk the shipment poses to the health and safety of the worker, public, or environment.

(c) Proof of OST approved tie-down procedures for package.

Prior to first use, contractors must become an authorized user. Contractors must submit a written request to the NNSA CO through the Field Organization Manager for review and approval. The request must be supported by site specific packaging procedures

Authorized Users must maintain and use current copies of the TSRA and OTD.

e. Quality Assurance.

(1) Contractors using or performing design, testing, fabrication, procurement, inspection, operations or maintenance for Type B and fissile materials packaging must perform those activities under a 10 CFR 71, Subpart H compliant quality assurance (QA) program. Contractors must submit their quality assurance program, through the Field Organization Manager, to the NNSA CO for approval.

(2) Contractors that perform functions for all other radioactive and hazardous materials packaging must perform those operations under a DOE Order 414.1D compliant QA program approved by the responsible Field Organization Manager.

(3) Deviations must be reported as specified by DOE Order 232.2, Admin Chg. 1, Occurrence Reporting and Processing of Operations Information.

f. Transportation Safeguards System Shipment.

(1) Contractors must submit their shipment needs in a Transportation Shipping Request (TSR) no less than 60 days prior to Material Availability Date, with updates before the 30 and 7 day submittal requirements.

(a) Prior to completing a TSR, contractors must ensure current shipping authorizations (OTA, OTC, OTD), or shipping papers are available. The TSR content, format, and mechanism must follow the defined OST, as addressed in the Shipment Forecast and Request Procedure (SFRP).

(b) Requests for significant variances to the TSS schedule (TSR requirements) must be submitted per the SFRP.

(2) Unless specifically directed by DOE, contractors preparing shipments of MNSI for the TSS need not follow the placarding requirements of 49 CFR

Part 172 Subpart F.

(3) Contractors who request shipment of packages within the TSS that do not have OST approved tie-down procedures, must develop and submit the tie-down procedures and any associated analysis to OST for approval. The final, OST approved tie-down procedures must be provided to the NNSA CO.

g. Contractors must ensure that their organizations perform annual self-assessments of activities covered by this CRD.

h. Training.

(1) Each contractor that offers MNSI for transportation must:

(a) Ensure that all personnel who support and/or perform packaging and transportation operations are appropriately trained and qualified; and

(b) Maintain auditable training records in accordance with approved NNSA or site specific records schedule.

PREPARATION METHODOLOGY FOR DOE/NNSA OFFICE OF SECURE TRANSPORTATION'S DOCUMENTED SAFETY ANALYSIS

1. Purpose. Appendix A of Title 10 Code of Federal Regulations Part 830 (10 CFR 830), *Nuclear Safety Management,* identifies DOE Order 461.1 as a 'safe harbor' for developing a documented safety analysis (DSA) for the offsite transportation "...of nuclear explosives, nuclear components, Naval nuclear fuel elements, Category I and Category II special nuclear materials, special assemblies, and other materials of national security." This Appendix describes an acceptable methodology for the DOE/NNSA Office of Secure Transportation (OST) to use to develop and maintain a DSA that complies with the Safety Basis requirements of 10 CFR 830.

2. Applicability and Scope. This methodology applies to OST and to all contractors supporting development of the OST DSA. OST offsite transportation operations begin when the loaded conveyance is closed and ends when the conveyance is opened at its destination.

   DOE Order 452.2, *Nuclear Explosive Safety,* defines the offsite transportation of nuclear explosives as a mobile nuclear explosives operation, and specifies the nuclear explosives safety program's requirements. In addition to developing a DSA compliant with this Order, OST must also comply with the requirements of DOE Order 452.2, as applicable.

3. Objective. This methodology was developed with consideration of both DOE nuclear facility safety requirements and the Department of Transportation's (DOT) hazardous material transportation requirements.

   DOE/NNSA must not use limited nuclear safety resources to analyze operations that comply with applicable national consensus codes and/or U.S regulations. The OST DSA must identify operations that are not compliant with DOT requirements, and assure that these non-compliant operations have been adequately analyzed and necessary hazard controls have been identified. The DSA must demonstrate that the identified hazard controls are commensurate with the level of hazards associated with OST's offsite transportation operations.

4. Safety Analysis Methodology. The methodology below describes how OST will comply with the Safety Basis requirements of Subpart B of 10 CFR 830. This methodology includes expectations associated with:

   - Describing all offsite transportation operations,
   - Identifying specific operations that cannot comply with DOT requirements, and
   - Analyzing those operations that cannot comply with DOT requirements.

4.1 Performing the Hazard Categorization. DOE Standard 1027, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Report*, defines a methodology for hazard categorization and provides insight into using a "graded approach" for development of safety analysis documents. The Standard includes the following Hazard Category definitions:

- Hazard Category 3 facilities have the potential for only significant localized consequences
- Hazard Category 2 facilities have the potential for significant on-site consequences
- Hazard Category 1 facilities have the potential for significant off-site consequences

The nature of OST operations are unique compared to typical nuclear operations and facilities throughout the DOE Complex. These operations commonly involve offsite transportation of quantities of radioactive material that exceed the Hazard Category 2 threshold quantities identified in Table A.1 of DOE Standard 1027. Therefore, to comply with the requirements of 10 CFR 830, OST operations involving offsite transportation of radioactive materials are expected to be categorized as Hazard Category 2.

4.2 Preparing a Documented Safety Analysis. OST must prepare a DSA for offsite transportation of nuclear explosives, nuclear components, naval nuclear fuel elements, Category I and Category II special nuclear materials, special assemblies, and other materials of national security interest. DOE Standard 3009, *Preparation Guide for US Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, is an approved methodology for demonstrating compliance with 10 CFR 830. DSAs developed by OST must comply with the requirements of DOE Standard 3009, except for deviations that are specifically identified in this Appendix.

4.3 Defining the scope of work. The DSA must define the scope of the OST mission as it relates to the offsite transportation of nuclear explosives, nuclear components, naval nuclear fuel elements, Category I and Category II special nuclear materials, special assemblies, and other materials of national security. All OST offsite transportation operations fall into one of three categories; Nuclear Explosives shipments, Risk-based non-DOT compliant shipments, or DOT compliant shipments.

The DSA must identify the subset of these offsite transportation operations that cannot comply with DOT requirements. These operations must be described in detail in the DSA per the requirements of DOE Standard 3009.

4.4 Identifying and analyzing the hazards. Shipping organizations are responsible for identifying and analyzing the hazards associated with shipments that comply with

DOT requirements. The Requirements section of this Order describes these processes. Because compliance with DOT requirements provides for adequate protection of workers and the public from the hazards associated with transportation of hazardous materials, identification and analysis of hazards associated with operations that comply with DOT requirements do not need to be included in a DSA.

The identification and analysis of hazards associated with shipments that do not comply with DOT requirements (i.e., shipments of nuclear explosives and other risk-based non-DOT compliant shipments) must be included in the DSA per the requirements of DOE Standard 3009. As noted below, all structures, systems, and components (SSCs) identified in the hazard analysis that are necessary for providing adequate protection of workers are to be categorized as "safety SSCs."

4.5 Weapon response information. Given the unique hazards associated with operations involving nuclear explosives, weapons response information is used to demonstrate that the identified hazard controls are sufficient to ensure adequate protection of workers and the public for those hazard scenarios for which the hazard cannot be eliminated or adequately mitigated. In general, weapon response information is the probability of hazardous material dispersal, high explosive violent reaction (HEVR), inadvertent nuclear detonation (IND), or worker safety consequence given a specific hazard environment. As needed, OST must follow the processes defined in DOE Standard 3016, *Hazard Analysis Reports for Nuclear Explosive Operations*, associated with requesting and using weapons response information.

4.6 Accident Analysis. For those transportation activities that do not comply with DOT requirements, the DSA must include analysis of the bounding accidents that could occur (i.e., design basis accidents or DBAs), per the requirements of DOE Standard 3009. However, it is not necessary for the DSA to include analysis of the consequences for DBAs involving HEVR or IND of nuclear explosives; rather, the DSA should assume that these accidents will challenge the Evaluation Guideline of 25 rem, as established in DOE Standard 3009. Likewise, because many HEVR and IND scenarios cannot be eliminated or their consequences be adequately mitigated, prevention is typically relied upon rather than mitigation and analysis of mitigated consequences for HEVR and IND scenarios is also unnecessary. The analysis of OST accidents should identify the complete set of controls and recommend any new controls necessary to demonstrate that every effort has been made to lower the accident likelihood.

To simplify the analysis of all other DBAs involving offsite transportation operations that do not comply with DOT requirements, the maximally-exposed offsite individual (i.e., the public) may be assumed to be 2,500 feet from the transport vehicle in determining whether the consequences associated with these accidents challenges the Evaluation Guideline.

4.7 Deriving hazard controls and defining safety management programs. Per DOE Standard 3009, the DSA must identify the hazard controls necessary to ensure adequate protection of workers and the public, demonstrate the adequacy of these controls to eliminate, limit, or mitigate identified hazards, and define the process for maintaining the hazard controls.

Given the proximity of OST offsite transportation operations to the public, distinctions made to categorize hazard controls as either protecting workers or protecting the public are unnecessary. That is, rather than designating SSCs as safety-significant or safety-class, all SSCs whose failure could result in consequences exceeding evaluation guidelines (EGs), or whose preventive or mitigating function is a major contributor to defense in depth and/or worker safety, are designated as "safety SSCs."

When determining the requirements associated with the design, implementation, maintenance, quality assurance, and configuration management of "safety SSCs" through application of other DOE Directives and Standards, OST must apply the requirements associated with safety-class controls for these "safety SSCs."

Those administrative controls that have safety importance equivalent to engineered controls and would be designated as "safety SSCs" if engineered controls were available must be identified and developed as Specific Administrative Controls (SAC), consistent with DOE Standard 1186, *Specific Administrative Controls*.

The DSA must include the Technical Safety Requirements necessary to ensure "safety SSCs" are available to fulfill their credited safety functions and functional requirements, per the requirements of DOE Standard 3009.

The DSA must define the characteristics of the safety management programs necessary to ensure the safe operation of the facility, per the requirements of DOE Standard 3009. These safety management programs must include quality assurance, procedures, maintenance, personnel training, conduct of operations, emergency preparedness, fire protection, radiation protection, and criticality safety.

4.8 Approval and Updates of the Documented Safety Analysis. OST must submit the DSA to the safety basis Approval Authority. The Approval Authority will formally document approval/disapproval in a Safety Evaluation Report, and may require additional operational controls or constraints to be included in the safety basis. The DSA must be kept current to reflect any changes in work or hazards, as they are analyzed in the DSA.

5. Transportation Authorizations and the Unreviewed Safety Question Process. 10 CFR 830.203 requires that OST establish, implement, and take actions consistent with an unreviewed safety question (USQ) process. OST must submit their USQ

procedure to the Safety Basis Approval Authority for approval. The USQ process must be used to evaluate both (a) any new shipments that do not comply with DOT requirements and were not previously evaluated in the OST DSA and (b) proposed changes to equipment or procedures associated with shipments that were previously evaluated in the OST DSA. As described in this Order, OTAs and OTDs are not DOT compliant. Therefore, shipments made using OTAs and OTDs not previously evaluated in the OST DSA must be reviewed using the USQ process to determine whether the Safety Basis Approval Authority must approve modifications to the OST DSA prior to authorization of the subject shipments.